



*Tul'sk Kz E.*

indications become apparent of deviation from the rectilinear correlation between deformation and load during the tensile test of the model. Measurements carried out on finished compressors corroborated the results obtained in the experiments referred to. Tensile tests based on these experiments were carried out over the fixture securing the blade in an axial compressor. The recess intended to take the blade was closed by means of an insert through which were passed two pins. A model specially designed for the tensile test was subjected to the test and the deformation of the blade and insert measured. The location of the insert was such that the blade has been torn from the dovetailed recess. The test results compiled in the form of diagrams determine the critical load at which the first permanent deformation occurs. The safety factor in relation to the critical load referred to and by allowing for a safety factor of from 1.5 to 2.0 the test load was determined and found to be by 80% to 120% higher than the actual load which was used for which it was

2/2

*gjt*

TULISZKA, Edmund (Lodz)

Temperature distribution in air stream cooled turbine rotor disks.  
Archiw bud masz 8 no.3:273-297 '61.

TULISZKA, E.

Calculation of strength in the rotating disks of gas turbines. p. 227.

ARCHIWUM BUDOWY MASZYN, Vol. 2, No. 3 1955

(Polska Akademia Nauk. Komitet Budowy Maszyn) Warszawa

SOURCE: EAST EUROPEAN ACCESSIONS LIST Vol. 5, No. 1 Jan. 1956

142/1110

221,435-253 1534,242,2

Calculation of Strength in Rotating  
Disks of Gas Turbines

Arch. Budowy Maszyn  
2(3), 227-263

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APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757420001-4"

TULISZKA, Edmund (Poznan)

Air-cooled rotating disks of constant strength. Archiw bud  
masz 11 no. 1:23-37 '64.

ACCESSION NR: AP4038923

P/0032/64/011/001/0023/0037

AUTHOR: Tuliszka, Edmund (Poznan)

TITLE: Air-cooled rotor disks of uniform strength

SOURCE: Archiwum budowy maszyn, v. 11, no. 1, 1964, 23-37

TOPIC TAGS: gas turbine, gas turbine engine, gas turbine rotor, gas turbine rotor disk, air-cooled rotor disk, heat engine, turbine type heat engine, thermodynamics, engine thermodynamic cycle

ABSTRACT: The efficiency of turbine type heat engines; gas turbine engines in particular, clearly depends upon the maximum temperatures of the engine's thermodynamic cycle. The level of these temperatures is stipulated by the strength properties of the construction material at elevated temperatures. If engine cycle temperatures which are higher than permissible are to be used, the elements subjected to this thermal overload are appropriately cooled. The cooling of the elements brings about, in addition to lowered temperatures, a certain distribution of them, which then causes thermal stresses to originate. The strength of the element thus depends upon the temperature, thermal stresses, and mechanical stresses originating from operation. This problem was examined by the author on the example

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ACCESSION NR: AP4038923

of a turbine rotor disk. The disk is generally cooled by a jet of cold air blown onto its lateral surface. As a result, heat exchange between the disk and cooling agent takes place. A flow of heat through the disk takes place, primarily in a radial direction. Under stable operating conditions, the origination of temperature distribution in the disk is then dependent upon the conditions of heat exchange with the surroundings and upon its form. This establishes a definite temperature field. Stresses, originating as the result of temperature distribution and the inertia forces of rotating masses, appear in the disk. The uniform strength was determined by M. T. Huber's hypothesis [Abstractor's note: Huber's hypothesis is not explained]. Equations which determine temperature and stress in relation to the working conditions are derived. The variability of Young's modulus and the significances of uniformly-acting stresses are taken into account. The system of equations defining the shape of a uniform strength disk is solved by numerical methods. A numerical example is given. Orig. art. has: 4 figures, 1 table and 27 equations.

ASSOCIATION: none

SUBMITTED: 00Aug63

DATE ACQ: 03Jun64

ENCL: 00

Card 2/3

ACCESSION NR: AP4038923

SUB CODE: PR,TD

NO REF SOV: 001

OTHER: 007

Card 3/3

TULISZKA, Edmund, doc. dr. inz.

The production of compressed air for blast furnace supply.  
Inst techn ciepl Prace 9 no.17:1-22 '61.

29280 P/032/61/008/003/003/004  
D265/D301

26.7/24  
AUTHOR:

Tuliszka, Edmund (Łódź)

TITLE:

Temperature distribution in rotor discs of gas turbines, cooled by an air stream

PERIODICAL: Archiwum budowy maszyn, v. 8, no. 3, 1961, 273 - 296

TEXT: The conclusions of the paper are concerned with steady working conditions and describe dependence of temperature fields on initial temperature, direction of the stream of cooling air etc. All heat transfer parameters are assumed to be a function of the radius only and in practical cases the mean values are used. Disc temperature  $T_w$  and stream temperature  $T_s$  are assumed to be functions of  $r$  only. Heat from the disc is absorbed by the shaft. The mathematical treatment takes into account the effect of function losses and changes of conditions of heat transfer. Differential equations for temperature distribution in the disc, as well as in the air stream, are established. Boundary conditions are given. The analytic solution is found for a specified class of discs; an  
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29280 P/032/61/008/003/003/004  
D265/D301

Temperature distribution in ...

approximation is

$$\begin{aligned} \frac{d\theta_w}{dx} &= \frac{K_1}{2,6\delta} \left[ 1 + \frac{x}{(x+a)^2} \right] - \frac{cC_M}{1,3b\delta} x^{1,6/2,6} \left[ 1 + \frac{x}{(x+a)^2} \right], \\ (24) \quad \theta_w &= \frac{K_1}{2,6\delta} \left[ x - \frac{x}{x+a} \right] - \frac{cC_M}{1,3b\delta} \left[ \frac{2,6}{7,2} x^{2,2/2,6} + x \int \frac{x^{1,6/2,6}}{(x+a)^2} dx \right] + K_2, \\ \theta_s &= 4,6 \frac{C_M}{b} x^{2,2/2,6} + \theta_w. \end{aligned} \quad (24)$$

$\theta_w = T_w/\theta$ ,  $\theta_s = T_s/\theta$ ,  $T_w$  being the temperature of the disc,  $T_s$  that of the air stream,  $\theta$  - reference temperature,  $x = r^{2,6}$ ,  $C_M = C_M Re_W^{1/5}$ ,  $C_M$  - friction coefficient,  $Re_W$  - Reynolds number of the disc,  $\delta = 1 + (\kappa/(1 + \alpha)^2)$ ,  $\alpha$  and  $\kappa$  being parameters of the shape of the disc which is determined by the equation  $h$  (= disc width) =  $\delta(x + \alpha)^2/x[(x + \alpha)^2 + \kappa]$ ;  $B$  and  $C$  are heat exchange coefficients given by

$$b = 1.78 \cdot 10^3 \frac{\theta}{T_s^{0,3} R^2 \omega^2}, \quad c = 8.55 \cdot 10^{-3} \frac{\omega^{0,8} R^{2,6} P^{0,8}}{T_s^{0,9} H^{(10^3)}} \quad \times$$

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Temperature distribution in ...

in which  $R$  is the inner radius of the disc,  $\omega$  - angular velocity of the disc.  $H$  - discwidth at  $r = R$  [Abstractor's note:  $P$  not defined]. The constant  $K_1$  is to be determined from the choice of  $d\theta_w/dx$  in any cross-section; and  $K_2$  from the boundary conditions. The working gas temperature is found to affect principally the rim temperatures; the heat exchange coefficient at the outer disc rim is of great importance. The considerations of the case  $Q = 0$  [Abstractor's note:  $Q$  not clearly defined] shows that intensive rim cooling can remove not only combustion gas heating, but also heating due to disc friction losses. Shaft cooling will also reduce the disc temperature. It is recommended that a) Side face cooling should be only sufficient to carry away disc friction heat; b) The heat flow from the combustion gases be reduced by insulation. It is suggested that the most effective remedy for rim heating would be to use an insulating layer. The other method consists of blowing in cold air into the roots of fir-tree rooted blading. This is most effective.  $C_M$  varies only slightly over a wide range of operating conditions and hence, it does not affect temperature distribution. This enables calcula-

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D265/D301

Temperature distribution in ...

tion of the three functions from Eq. (10a), giving  $T_{s-o}$  (initial value of  $T_s$ )  $H$  and  $P$  per given values of  $a/Q$ ,  $b$ ,  $c$  and taking  $\theta$  as one degree. Thus the outer width  $H$  is fixed and there is now a number of possibilities for the selection of  $P$ ,  $T_{s-o}$ ,  $W$  and  $R$ . The rest of the paper is detailed discussion of a numerical example, with general conclusions drawn from it. There are 15 figures and 8 references: 2 Soviet-bloc and 6 non-Soviet-bloc. The reference to the English-language publication reads as follows: G.W. Watson, A treatise on the theory of Bessel functions. University Press Cambridge 1944.

SUBMITTED: January 1961

X

Card 4/4

TULISZKA, Edmund (Poznan)

Expansion processes in a multistage radial (Ljungstrom) and an axial turbine under various working conditions. Archiw bud maszyn 12 no.1:67-84 '65.

1. Submitted October 1964.



TULISZKA, Edmund (Warszawa)

Temperature distribution in air stream cooled turbine rotor disks. Archiw bud masz 8 no.3:273-297 '61.

V. WYKŁADOWE OBLICZANIE WIRU-  
JACYCH IARZCH MASZYN CIEPLINYCH WIRNIKO-  
WYCH (CALCULATION OF STRENGTH IN POTAT-  
ING DISCS OF GAS TURBINES - English Version)

Arch. Indus. Mus. de Mexico, No. 1, 1958, pp. 1-17.  
 Published in English.

the field of temperatures for the case of heating of the discs exclusively by means of gas flowing

through the channels between the blades, with measurements on the interstage leakage, and use of the superposition method to solve the problem of boundary conditions of the stress states in terms of the temperature of the shaft and the properties of the blade rim, with regard to the exchange.

ETD

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25996

P/032/60/007/004/001/002  
D287/D308

26.2120

AUTHOR:

Tuliszka, Edmund (Łódź)

TITLE:

Temperatures and thermal stresses in disk rotors of thermal turbines under various working conditions

PERIODICAL:

Archiwum budowy maszyn, v. 7, no. 4, 1960, 387-477

TEXT: The author analyzes the steady-state field of temperatures and stresses in the disk rotors of thermal turbines. Based upon this analysis, a method is derived for determining the distribution and thermal stresses in the disk rotors, taking into account the magnitude of interstage leakages, paddling power of the revolving disks, variability of heat exchange coefficients along the rotor radius, and different directions of leaks flowing over the rotor disks. Temperature distributions are determined for selected sets of disks by means of the cylindric functions. In particular, formulas are derived for calculating (1) the fundamental heat exchange; (2) the heat-exchange coefficient and the coefficient of friction loss in revolving disks; (3) the temperature distributions in rotor disks and interstage leakages; (4) the temperature distributions for large and


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25996

P/032/60/007/004/001/002  
D287/D306

Temperatures and thermal...

small volume of leakages; (5) the boundary conditions; and (6) the distribution of thermal stresses. Numerical examples are given. The analysis revealed that the field of temperatures and stresses in the turbine rotors is effected not only by the thermodynamic parameters and physical properties of the medium, the geometrical size of the rotor disks and their angular velocity, but also by the volume of leakages. Thus, it became possible to determine those spots on the rotor disks which are particularly endangered by thermal stresses. There are 41 figures, 15 tables and 27 references: 11 Soviet-bloc and 16 non-Soviet-bloc. The four most recent references to English-language publications read as follows: W. E. Milne: Numerical solution of differential equations, John Wiley and Sons I. N. C. New York - 1957; A. Parker: The reversible bending of turbine shafts with temperature - Proceedings of I. M. E. vol. 169, Nr 41 - 1955, Institution of Mechanical Engineers London - 1955; D. G. Wilson and I. A. Pape: Convective heat transfer to gas turbine blades surfaces, Proceedings of Mechanical Engineers vol. 168, Nr 36, Institution of Mechanical Engineers - London 1954; R. D. Hoyle: Unsteady heat flow in a large irregular solid - Proceedings of the seventh international congress for applied mechanics, vol



Card 2/3

25996

P/032/60/007/004/001/002  
D287/D306

Temperatures and thermal...

3, 1948, publisher: Organizing Committee. [Abstractor's note: This article is 92 pages long. Its length and complexity render it practically impossible for normal abstracting.]

SUBMITTED: May, 1960

X

Card 3/3

TULISZKA, E., doc. dr inż.

Thermal stresses in air-cooled rotor discs of gas turbines.  
Techn lotn 18 no.7:168-176 JI '63.

1. Katedra Teorii Maszyn Ciepłych, Politechnika, Poznań.

L 18866-63

EWP(r)/EWT(d)/EWP(q)/EWT(m)/BDS AFFTG/ASD Pad

EM/JD/HW

ACCESSION NR: AP3007185

P/0008/63/000/007/0168/0176

AUTHOR: Tuliszka, E. (Dr. of Engineering, Docent)

TITLE: Thermal stresses in air-cooled rotor disks of gas turbines

SOURCE: Technika lotnicza, no. 7, 1963, 168-176

TOPIC TAGS: gas turbine rotor disk, turbine rotor disk, gas turbine, rotor disk, thermal stress, temperature distribution, temperature gradient, rotor disk cooling, heat transfer, cooling-air consumption

ABSTRACT: A method for calculating thermal stresses in turbine rotor disks is presented. Equations for temperature distribution in the disks are formulated on the basis of the following assumptions: 1) Flow conditions (initial temperature,  $T_{s-o}$ , and flow rate,  $m$ ) are identical on both sides of the disk. 2) Temperature distribution is axisymmetrical in both the cooling medium,  $T_s$ , and the disk,  $T_w$ . 3) Only convective heat transfer exists in a radial direction in the cooling stream. 4) The disk is heated by gases flowing through the cascade of blades, creating on its outer cylindrical surface a

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ACCESSION NR: AP3007185

temperature gradient,  $G_z$ . The equations are simplified and solved in terms of Nusselt and Reynolds numbers. The method outlined can be used for calculating the temperature distribution in rotating air-cooled disks of arbitrary profile as a function of operating conditions and heat transfer between the rotor and the surrounding medium. The resulting thermal stresses are calculated by the usual methods. As an example, calculations were made for a turbine disk of 40-mm thickness and 250-mm radius, with initial cooling-air temperature of 190C and pressure of 3.5 atm, at 11,000 rpm. The influence of cooling-air consumption and  $G_z$  on the thermal stresses is discussed. It is concluded that 1) at constant  $G_z$  an increase in the cooling-air flow rate along the side surfaces of the disk results in a pronounced decrease of stresses at small gas flow rates and 2)  $G_z$  decisively affects the stress distribution. Figs. 1 and 2 of the Enclosure show two possible ways of reducing thermal stresses in turbine disks. Orig. art. has: 13 figures and 29 formulas.

ASSOCIATION: Katedra Teorii Maszyn Ciepłych, Politechnika Poznańska (Department of Heat Machine Theory, Poznan Polytechnic Institute)

Card 2/62



TULISZKIEWICZ, Ferdynand, dr. med.

Delayed bleeding after puncture of the maxillar sinuses during blood coagulation disturbances. Otolaryng. Pol. 19 no.1:139-141 '65.

1. Z Oddziału Otolaryngologicznego Szpitala Miejskiego w Tomaszowie Lubelskim (Ordynator: lek. med. F. Tuliszkiewicz; Dyrektor Szpitala: dr. J. Zukowski).

HERMAN, Alojzy, inż.; KOLIS, Jan, inż.; PUTYNSKI, Zbigniew, inż.;  
TULISZKA, Zenon, inż.; LUKOMSKI, Antoni, technik; PTASZYNSKI,  
Stefan, technik; ZAPALA, Stanislaw, technik; TOBIASZ, Szczepan,  
technik

Rotation furnace for burning vinasse. Gosp paliw 11 Special  
issue no.(95):8 Ja '63.

1. Sieradzka Gorzelnia Przemyslowa, Sieradz.

OSTROUKHOV, I.V.; TUL'GUK, Ye.N.

Analyzing the operation of the planetary tool of the PKG-3  
combine. Sbor. nauch. trud. UkrNIISol' no.7:69-77 '64  
(MIRA 18:1)

TUL'K, A [Tulk, A.], master sports, trener

Mantery is growing. Voen. znan. 41 no.10:43 0 '65.

(MIRA 18:10)

TULKA, Vladimir, promovany ekonom

Discovering the possibilities of reducing total costs.  
Podn org 18 no.12:543-545 D '64.

1. Elektro-Praga, Jablonec nad Nisou.

BREGER, A.Kh.; BYABUKHIN, Yu.S.; TUL'KES, S.G.; VOLKOV, Ye.N.

Indium-gallium circulation loop of an IRT nuclear reactor.  
Trudy Inst.fiz.AN Gruz.SSR 8:51-58 '62. (MIRA 1642)  
(Nuclear reactors)

RYABUKHIN, Yu.S., starshiy nauchnyy sotrudnik; TUL'KES, S.G., nauchnyy  
sotrudnik

Radiation circuit, a new source of gamma rays. Nauka i zhizn'  
29 no.5:61-64 My '62. (MIRA 15:11)  
(Gamma rays)

TULKINA, M. A.

USSR/Metals  
Alloys  
Aluminum - Magnesium

Nov 48

"Mechanical Characteristics of Alloys of the System Al-Mg," Ye. M. Savitskiy, M. A. Tulkina, Inst of Gen and Inorg Chem imeni N. S. Kurnakov, Acad Sci USSR, 3 pp

"Dok Ak SSSR" Vol IXIII, No 1

Experiments established that alloys friable at room temperature, placed under defined temperature-velocity conditions of deformation, behaved like plastic substances. Another great advantage in deformed alloys is their ability to approximate a state of equilibrium quickly as compared with cast alloys. Submitted by Acad G. G. Urazov  
6 Sep 48

PA 61/49T73



KITAYTSEV, G.P., inzhener [deceased]; KOSOROTOV, I.V., inzhener; ~~TULLAYEV~~  
N.P., inzhener; FRUMKIN, F.D., inzhener; YAKOVLEV, V.N., inzhener,  
redaktor; TURKOV, G.A., inzhener, redaktor; TIKHANOV, A.Ya.,  
tekhnicheskiiy redaktor

[Assembling machine tools; a concise reference manual] Montazh  
metallorazhushchego oborudovaniia; kratkoe spravochnoe posobie.  
Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956.  
123 p. (MLRA 10:3)

(Machine tools)

TULAYKOVA, K.P.

Growth of rhizosphere micro-organisms in direct contact with  
grammes of superphosphate. Mikrobiologiya 25 no.3:299-304  
My-Je '56. (MIRA 9:10)

1. UL'yanovskiy sel'skokhozyaystvennyy institut.  
(RHIZOSPHERE MICROBIOLOGY) (PHOSPHATES)

TULINTSEY, Vasilii Georgiyevich; AKHREMOVICH, M.B., red.; VOROB'YEV,  
F.I., red.; CHUNAYEVA, Z.V., tekhn.red.

[Principles of landscape gardening] Osnovy dekorativnogo  
sadovodstva. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1958. 214 p.  
(MIRA 12:3)

(Landscape gardening)

*TULKIN, M.A.*

TULKIN, M.A., inzh.; KERSHTEYN, M.I., inzh.

~~Facing~~ machine parts with hard alloys. Metallurg 3 no.1:5-6 Ja '58.  
(MIRA 11:1)

1. Zavod im. Dzerzhinskogo.  
(Hard facing)

ORLOVA, L.V.; RODINOV, V.M.; TULL', L.I.

Comparison of the effect of total roentgen irradiation and  
adrenocorticotrophic hormone ACTH on corticosteroid secretion  
in rabbits. Probl. endkok. i gorm. 6 no. 1:33-37 Ja-F '60.

(MIRA 14:1)

(RADIATION—PHYSIOLOGICAL EFFECT) (ACTH)  
(ADRENOCORTICAL HORMONES)

IVENSKIY, Yu.N., inzh.; TULLER, A.G., inzh.

Electric equipment for production lines composed of machine-tool  
units. Mekh.i avtom.proizv. 15 no.10:39-45 0 '61. (MIRA 14:10)

(Machine tools) (Electronic control)

ACC NR: AP6035029

(A)

SOURCE CODE: UR/0121/66/000/009/0010/0014

AUTHORS: Tuller, A. G.; Konyukh, A. I.

ORG: none

TITLE: Analysis of the operational reliability of automatic lines

SOURCE: Stanki i instrument, no. 9, 1966, 10-14

TOPIC TAGS: voltmeter, reliability, probability, statistics, automatic machine, chi square distribution / N370 voltmeter

ABSTRACT: Problems of determining the quantitative characteristics of the reliability of automatic lines are examined. The duration of trouble-free operation and the recovery of lost work capacity of lines can be determined more accurately when the statistical data are entered by recording voltmeters (see Fig. 1). The average time between adjacent failures:

$$T = \frac{\sum_{i=1}^n x_i}{n} = \frac{t_{\Sigma}}{n}$$

where  $t_{\Sigma}$  is the total cycle time during the inspection. The average recovery time:

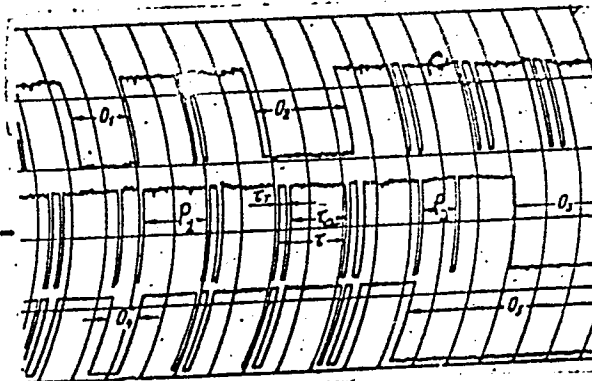
$$T_r = \frac{\sum_{i=1}^n y_i}{n} = \frac{t_r}{n}$$

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UDC: 621.9:658.527.011.56:62-19.001.5

ACC NR: AP6035029

Fig. 1. Graph of operation of automatic line taken directly from recording voltmeter:  $\gamma$  - duration of line cycle;  $\gamma_a$  - duration of cycle of power attachments;  $\gamma_T$  - duration of conveyor cycle;  $O_i$  - stoppages of line;  $P_i$  - protractions of line cycle



where  $t_r$  is the total recovery time during the inspection. Formulas are given for the coefficient of specific losses, which characterizes the specific reliability introduced by various components of the line, and for the utilization factor, which is numerically equal to the probability of finding the line in the working state. Approximate confidence limits are calculated. Orig. art. has: 15 formulas, 3 graphs, and 3 tables.

SUB CODE: 14, 13/ SUBM DATE: none/ ORIG REF: 002

Card 2/2



TULLER, A.G., inzh.

Determining the reliability of automatic control systems for  
machine-tool lines. Mekh. i avtom. proizv. 18 no.10:41-44  
O '64. (MIRA 17:12)

IVENSKIY, Yu.N.; TULLER, A.G.; GEYLER, L.B., doktor tekhn. nauk,  
prof., retsenzent; KHARIZOMENOV, I.V., doktor tekhn.  
nauk, prof., ref.

[Electric control of machine tool lines] Elektroavtomatika  
stanochnykh linii. Moskva, Izd-vo "Mashinostroenie," 1964.  
324 p. (MIRA 17:4)

87949

S/121/60/000/012/001/015  
A004/A001

9.6000

AUTHORS: Ivenskiy, Yu. N., Tuller, A. G.

TITLE: The Alarm System in Automatic Transfer Lines

PERIODICAL: Stanki i Instrument, 1960, No. 12, pp. 1-3

TEXT: The authors describe and comment on some alarm systems in automatic transfer lines devised for the quick and exact location of defects. They point out that these alarm systems can be greatly simplified by using weak-current relays and electronic devices in low-voltage d-c circuits. Flashing lights which start to operate on the signal of the alarm detector are much more effective than the ordinary lights which normally burn half-incandescent and start to burn with a bright light if a defect occurs. Figure 1 shows the circuit of a delayed pulse-couple of flashing light. The use of flashing light extends the functional possibilities of indicator lights, since in this

Figure 1:

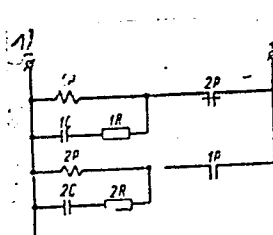
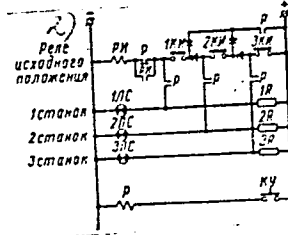


Figure 2:



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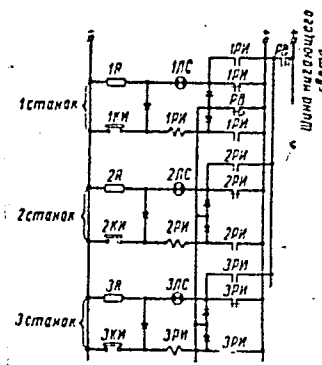
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A004/A001

# The Alarm System in Automatic Transfer Lines

case the pilot lamps can burn in the following three stages: 1. half-incandescent burning proving the intactness of the lamps; 2. fully incandescent burning showing the normal state of the unit being checked; 3. flashing-light burning indicating a defect in the controlled unit. Figure 2 shows a circuit developed by the SKB-8 of the Minskiy zavod avtomaticheskikh liniy (Minsk Plant of Automatic Transfer Lines) for the control and signalling of the initial position taken only by one normally open contact of the terminal switches of the machines. Two intermediate relays are used independently of the number of machines being controlled. The control of the participation of the machine in the preceding cycle is effected either as a control of the termination of the machining process of the component or, in the time function, as a control of the beginning of the cycle. The circuit shown in Figure 3 combines the control of the initial position and participation of the machine in the preceding cycle. This circuit operates in such a way that the pilot lamps are burning half-incandescent if the machine is not in the initial position, while the lamps are burning brightly if the machine is



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A004/AC01

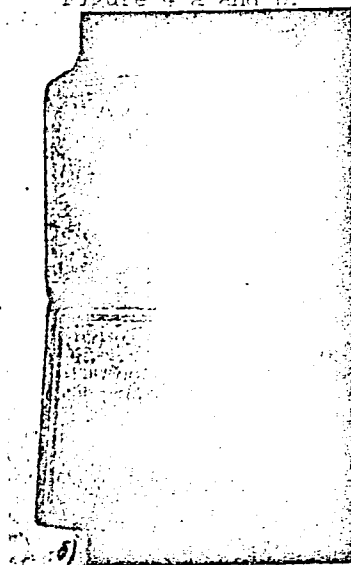
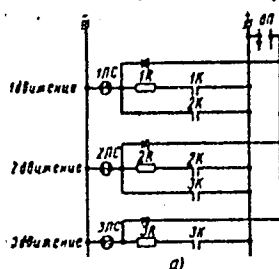
# The Alarm System in Automatic Transfer Lines

in the initial position. If any unit did not participate in the preceding cycle the corresponding lamp burns with a flashing light.

Figure 3:  $KI$  (KI) - initial position terminal switch;  $PI$  (PI) - relay;  $AC$  (LS) - signal lamp;  $R$  - resistor;  $PB$  (RV) - time relay.

The line is stopped, without being switched off by the operator, if one of the following three main causes occur: 1) voltage drop; 2) operation of a control device fitted in the line; 3) operation of a line tempo control relay, proving that the operation cycle of the line is not correct because of defects. In the circuit shown in Figure 4a the number of pilot lamps corresponds to the number of motions carried out by the respective units. After the line has stopped, the bright-burning lamps determine

Figure 4 a and b:



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AOO4/AOO1

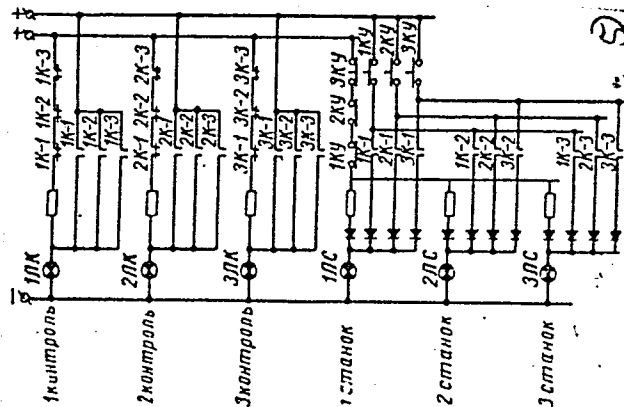
## The Alarm System in Automatic Transfer Lines

the fixed position of the movable units, while the half-incandescent burning lamps indicate those motions, delays or stops which in the intermediate position caused the line being stopped. A great number of signalling lamps on the central control panel renders observation difficult. One efficient way of reducing the number of lamps is to use the PP-36 (PP-36) slide switch. In this case the lamps located on the panel pertain only to one machine

Figure 5:

Figure 5:

tool, while the selection of the machine tool is carried out by the slide switch. An easy-to-watch alarm system is obtained according to the circuit shown in Figure 5. In the case of a great number of control devices only one lamp 1LS, 2LS, 3LS, is fitted for each machine tool. These lamps generally burn half-incandescent. A number of buttons 1KY (1KU), 2KU, 3KU ect., depending on the number of units and operations being controlled, are



Card 4/5.

87949

The Alarm System in Automatic Transfer Lines

S/121/60/000/012/001/015  
A004/A001

placed on the control panel. The pilot lamp is located beside each button. To determine the machine tool on which a control device started to operate, a button corresponding to this machine tool is pressed, and the pilot lamp of this machine tool starts burning with a flashing light, while the lamps of the remaining machine tools are extinguished. Germanium diodes are used to eliminate bypass spurious circuits. The authors point out that the right arrangement of the pilot lamps on the control panels is of great importance, since it enables the operator to be informed immediately of any changes taking place in the operation of automatic transfer lines. There are 6 figures.

✓✓

Card 5/5

IVENSKIY, Yu.N.; TULLER, A.G.; EL'PER, G.L.

Protection systems for control circuits and supply sources. Stan.i  
instr. 33 no.7:5-9 J1 '62. (MIRA 15:7)  
(Electric protection)



IVENSKIY, Yu.N.; TULLER, A.G.

Control and blocking in automatic machine-tool lines. Stan.i instr.  
31 no.11:3-5 H '60. (MIRA 13:11)  
(Automatic control) (Machinery, Automatic)

IVENSKIY, Yu.N., inzh.; TULLER, A.G., inzh.; EL'PER, G.L., inzh.

Elements of computing circuits in the control of continuous lines.  
Vest. elektroprom. 33 no.3:61-66 Mr '62. (MIRA 15:3)  
(Automatic control)

IVENSKIY, Yu.N.; TULLER, A.G.

Signaling in automatic machines-tool lines. Stan.i instr. 31 no.12:  
1-3 D '60. (MIRA 13:11)  
(Machinery, Automatic) (Signals and signaling)

TULLER, A.G., inzh.

Permanent reservation in control systems taking the type of  
failure into consideration. Priborostroenie no.2:5-7 F '65.  
(MIRA 18:3)

S/121/60/000/011/002/013  
A004/A001

AUTHORS: Ivenskiy, Yu. N., Tuller, A. G.

TITLE: Check and Interlock Systems in Automatic Machine Tool Lines 14

PERIODICAL: Stanki i Instrument, 1960, No. 11, pp. 3-5

TEXT: The authors present a survey of various check and interlock systems which are used for automated machine tools and transfer lines and point out that, although there is a great variance of such systems, they can be divided into three main groups: 1) Devices checking the location of individual objects and permitting their reciprocal displacement only under certain conditions. 2) Devices checking the state of objects or line apparatus (e. g. line speed, pressure of pneumatic or hydraulic systems etc.). 3) Devices for the measurement check of components being machined. The SKB-8 of the Minskiy zavod avtomaticheskikh liniy (Minsk Plant for the Manufacture of Automatic Transfer Machine Lines) uses for their checking and interlock systems to a great extent electronic units: resistors, capacitors, transistors and triodes, which makes it possible to build highly reliable miniature systems. The use of amplifiers on the base of these elements enables the requirements towards pickups as to their sensitivity and amplification ✓

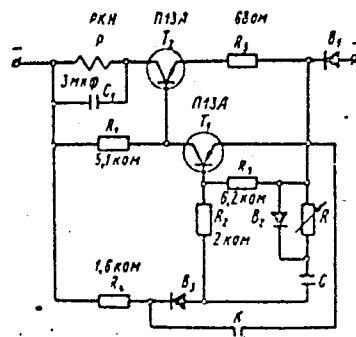
Card 1/5

S/121/60/000/011/002/013  
A004/A001

# Check and Interlock Systems in Automatic Machine Tool Lines

coefficient to be considerably lowered. The SKB-8 has developed transistor-type miniature static time relays which make it possible to obtain a time delay during the switching on or off. The command of relay operation is given in the normally open or normally closed state by the controlling contact. Figure 1 shows the circuit of a switch-off time-delay relay, where the telephone relay P is located in the triode collector circuit T. This relay is normally switched on, since the triode is open. Figure 2 shows a switch-on time-delay relay composed of the triodes  $T_1$  and  $T_2$ . The maximum time-delay errors at temperature variations in the range of 0 to 45°C do not exceed  $\pm 11\%$  relative to the delay whose magnitudes are shown in tables 1 and 2. When the switch-on time-delay relay is supplied from a source with a 3-phase rectifying circuit the maximum error does not exceed  $\pm 4\%$ . The SKB-8 has developed a simple device to check the tool wear, which is based on a step-by-step selector. Figure 3 shows the electric circuit of the tool wear

Figure 2:



Card 2/5



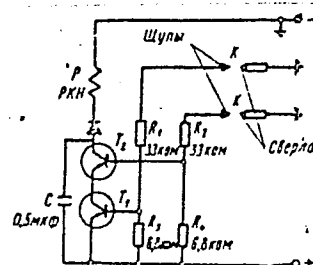
S/121/60/000/011/002/013

A004/A001

# Check and Interlock Systems in Automatic Machine Tool Lines

to operate only in that case if there is a contact between the gage feelers and the two drills. At a temperature of  $40^{\circ}$  and a voltage increase by 25% relative to the 24 v standard voltage, the maximum current passing through the gage feelers does not exceed 0.9 milliampere. If there is no contact between one gage feeler and tool the current passing through the relay does not exceed 0.5 milliampere, while in the case of the two contacts existing, at a temperature of  $15^{\circ}$  and a lowering of the voltage by 15%, the current magnitude amounts to not less than 11 milliampere which is sufficient to operate the type PKH (RKN) relay. For dimensional checks of machined components the models 5B-779 (BV-779U) and 5B-634 (BV-634U) electrocontact pickups have been widely used. Figure 5 shows the two-stage semiconductor amplifier for the electrocontact pickups and the amplifier circuit. These pickups ensure high-precision measurement and permit on their contacts a load of

Figure 4:



Card 4/5

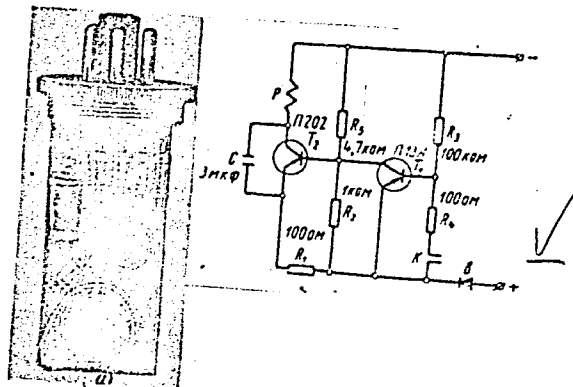


S/121/60/000/011/002/013  
A004/A001

# Check and Interlock Systems in Automatic Machine Tool Lines

up to 0.5 milliamperes only, at a voltage of 20 v. Since such a current magnitude does not suffice to operate the intermediate relays, it is necessary to fit amplifiers. There are 5 figures and 2 tables.

Figure 5:



IVENSKIY, Yu.N.; TULLER, A.G.; EL'PER, G.L.

Selecting current-supply sources for control circuits with  
wire communication equipment. Stan.1 instr. 33 no.5:24-26  
My '62. (MIRA 15:5)  
(Electronic control)

IVENSKIY, Yu.N.; TULLER, A.G.; EL'PER, G.L.

Counting circuits in the control of machine tools and automatic  
lines. Stan. i instr. 34 no.11:7-10 N '63. (MIRA 16:12)

IVENSKIY, Yu.N., inzh. (Minsk); TULLER, A.G., inzh. (Minsk)

Electrical systems for the control of the continuous lines of  
machine tools. Elektrichestvo no.4:32-39 Ap '63. (MIRA 16:5)  
(Automatic control) (Assembly line methods)

KUDYANOV, A.V., inzh.; TULLER, A.G., inzh.

Forced exchange of cutting tools in automatic lines. Mash. Bel.  
no.2:45-47 '60. (MIRA 16:7)

(Metal cutting tools) (Automation)

IVENSKIY, Yu.N., inzh.; TULLER, A.G., inzh.

Designing control systems with weak-current equipment. Mash.  
Bel. no.2:54-60 '60. (MIRA 16:7)

(Electric controllers)

**"APPROVED FOR RELEASE: 03/14/2001**

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**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757420001-4"**

2 figures and 20 formulas



GROU, I., ing.; TULLIU, D., ing.

Treatment of residual waters from dressing plants. Pt.1.  
Rev min 15 no.9:460-464 S '64.

GROU, I., ing.; TULLIO, D., ing.

Treatment of residual water of dressing plants. Pt. 2. Rev min  
16 no.1:23-28 Ja '65.

TULLIU, D., ing.; IACOBAN, I., ing.

Evaluation of poor siliceous iron ores by the Krupp-Renn  
method. Rev min 15 no.7:351-355 J1 '64

TULLIV, DUMITRU

H-8a

RUMANIA/Chemical Technology, Chemical Products and Their Application, Part 2. - Elements, Oxides, Mineral Acids, Bases, Salts. - Other Elements, Oxides, Mineral Acids, Bases, Salts.

Abs Jour: Referat. Zhurnal Khimiya, No 10, 1958, 33077.

Author : Teodor Popa, Ioan Ion, Dumitru Tulliu.

Inst : Institute for Studying Minerals.

Title : Industrial Utilization of Barytes and Questions Connected with its Concentration in People's Republic of Rumania

Orig Pub: Rev. minelor, 1957, 8, No 7, 342-347.

Abstract: The results of work carried out by the Rumanian Institute for Studying Minerals in 1953 to 1957 concern the development of a method of concentration of barytes of the chemical composition (in %)  $BaSO_4$  50 to 52,  $CaCO_3$  - 36 to 38,  $SiO_2$  - 5 to 6 and C

Card : 1/2

"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R

RUMANIA/Chemical Technology, Chemical Products and Their Application, Part 2. - Elements, Oxides, Mineral Acids, Bases, Salts. - Other Elements, Oxides, Mineral Acids, Bases, Salts.

H-8a

Abs Jour: Referat. Zhurnal Khimiya, No 10, 1958, 33077.

0.8 to 1 are presented. An industrial concentration scheme (tried out at industrial scale) consisting in flotation with a single-stage refining of the first concentrate is offered. 46% of barytes by weight is extracted from the raw material at this occasion, and a concentrate containing 94 to 95% of  $BaSO_4$  is obtained.  $Na_2SiO_3$  and a higher alcohol containing more than 16 C atoms in the chain are used as reagents. The method is simple, as far as its introduction into practice is concerned, and does not require any use of various expensive reagents used for similar purposes in other countries.

Card : 2/2

TUL'MAN, M., student; MAKSIMOV, A.M., kand. ist. nauk, nauchnyy rukovoditel'

Donets Basin Communists in the period of preparing the Great  
October Socialist Revolution. Sbor. nauch. rab. stud. SMO DII  
no.2:7-15 '57. (MIRA 11:12)

1.Gorno-mekhanicheskiy fakul'tet Donetskogo industrial'nogo  
instituta im. N.S. Khrushcheva.  
(Donets Basin--Revolution, 1917-1921)

USSR/Human and Animal Physiology - Metabolism.

T

Abs Jour : Ref Zhur Biol., No 3, 1959, 12420

Author : ~~Tulmin, E.~~

Inst : Tartu University.

Title : Changes in Gaseous Exchange with Sleep Therapy in Patients with Diseases of the Nervous System.

Orig Pub : Uch. zap. Tartusk. un-ta, 1957, vyp. 58, 186-203

Abstract : 118 patients with diseases of the nervous system were examined before and after sleep therapy (ST). Of 64 patients with normal gaseous exchange (GE) before ST, GE remained within normal limits in 28 patients after ST, it rose in 28, and in 8 it decreased. Of 54 patients with elevated GE before ST, GE was not changed in 20 patients after ST, in 7 it was still more elevated, and in 27 it decreased. In patients, who slept

Card 1/2

USSR/Human and Animal Physiology - Metabolism.

T

Abs Jour : Ref Zhur Biol., No 3, 1959, 12420

poorly and did not feel subjective improvement after ST, GE usually rose. Elevation of GE was observed as well with continued application of large doses of soporifics. In organic diseases of the central nervous system an elevation of GE was observed even when the results of ST were excellent. No connection was noted between the results of ST and elevation of GE, if GE was normal before ST. Decrease of GE, which was elevated before ST, in a majority of cases led to an improvement in the condition of the patients. ST in patients with hysteria and Parkinson's disease, in spite of a decrease of GE, did not improve their condition.

Card 2/2

- 6 -

SOV/20-123-6-39/50

3(0)

AUTHORS:

Kulikov, M. V., Tulokhonov, M. I.

TITLE:

Permian Deposits of the Chironskoye Field (East Transbaykal)  
(Permskiye otlozheniya Chironskogo polya (Vostochnoye Zabaykal'ye))

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 6, pp 1100-1103  
(USSR)

ABSTRACT:

Marine sediments are known in the above mentioned area at two places ("fields" in geological literature): a) Chironskoye and b) Borzinskoye. According to a literature review since 1928 (Yu. M. Sheynman, S. A. Muzylev, G. S. Kryazhev, I. V. Luchitskiy, S. P. Smelovskiy, D. F. Maslennikov, the last one by Ref 1) about the exploration of the Chironskoye field, the authors report about the results of geological fieldwork and mapping during 1955-1957 by M. I. Tulokhonov. The paleontological material was studied by M. V. Kulikov. The new data given by him caused essential corrections of the lithological characteristics of the rocks, of the thickness as well as of the stratigraphical position of the suites, which are known in this area. Lower Permian. Two suites belong to the Lower Permian: a) Chironskaya with a thickness of 400 - 900 m and

Card 1/3



Permian Deposits of the Chironskoye Field (East Transbaykal) SOV/20-123-6-39/50

b) Ungadyyskaya with a thickness of 370 - 400 m. They are covering metamorphic schists of the Ononskaya suite with a sharp angular-discordance. Upper Permian is represented by the Bereinskaya suite only (450 - 500 m thick). All the mentioned suites were described lithologically and paleontologically. According to the above mentioned new reports the Permian sediments have a much greater thickness than D. F. Maslennikov thought. They are paleontologically classified everywhere. One part of the sediments, which Maslennikov put into Trias conditionally, was put in the Upper Permian after determination of the fauna. The two fields are very similar to each other, lithologically speaking. But they differ from each other by the effusives of the Borzinskoye field, to which the volcanogenic tuffs in the Chironskoye field correspond. The fauna of the Chironskoye field shows relations to the fauna of the north-east of the USSR. The conclusions of Maslennikov about the boreal character of the fauna of Transbaykal were thereby proved. This fauna migrated along the Mongolo-Okhotskaya geosynclinal zone. The same fauna complex is found in the Permian of the northern part of the Mongol'skaya Narodnaya

Card 2/3

Permian Deposits of the Chironskoye Field (East-Transbaykal) SOV/20-123-6-39/50

Respublika (Mongolian People's Republic). The interpretation, that a transgression of the Permian sea surrounded the whole Mongolia from the south, is quite unfounded. As the fauna in the southern Mongolia differs essentially from that of the northern Mongolia, the authors followed the above mentioned ideas of Maslennikov (Ref 1). According to that the Permian sea penetrated into Mongolia through Transbaykal. There are 3 Soviet references.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut (All-Union Scientific Geological Research-Institute)  
Chitinskoye geologicheskoye upravleniye (Chita Geological Administration)

PRESENTED: July 16, 1958, by S. I. Mironov, Academician

SUBMITTED: June 16, 1958

Card 3/3

TULOVSKAYA, Z.D.; SEGALOVA, Ye.Ye.; REBINDER, P.A., akademik

Temperature dependence of the metastable solubility of  
monocalcium aluminate. Dokl. AN SSSR 147 no.1:153-154  
N '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet im.  
M.V. Lomonosova.

(Calcium aluminate)  
(Solubility)

SEGALOVA, Ye.Ye.; TULOVSKAYA, Z.D.; AMELINA, Ye.A.; REBINDER, P.A., akademik.

Causes for the decreasing strength of the crystalline structure of calcium aluminate formed at high temperatures. Dokl. AN SSSR 124 no.4:876-879 F '59. (MIRA 12:1)

1.Kafedra kolloidnoy khimii Moskovskogo gosudarstvennogo universiteta imeni M.V. Lomonosova.  
(Calcium aluminate crystals)

SEGALOVA, Ye.Ye.; TULOVSKAYA, Z.D.; BRUTSKUS, T.K.; BRANDER, F.A.

Phase transitions of hydrates formed by the hydration of calcium  
aluminates ( $\text{CaO} \cdot \text{Al}_2\text{O}_3$  and  $3\text{CaO} \cdot \text{Al}_2\text{O}_3$ ). Zhur. prikl. khim. 37 no.6:  
1227-1233 Je '64. (MIRA 18:3)

TULOVSKAYA, Z.D.; SEGALOVA, Ye.Ye.

Thermographic study of the hydration of monocalcium aluminate  
at various temperatures. Zhur. prikl. khim. 37 no.2:267-  
275 F '64. (MIRA 17:9)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

SEGALOVA, Ye.Ye.; TULOVSKAYA, Z.D.; BRUTSKUS, T.K.; REBINDER, P.A., akademik

Formation of stable and metastable hydrates in the hydration of  
anhydrous calcium aluminates ( $\text{CaO} \cdot \text{Al}_2\text{O}_3$  and  $3\text{CaO} \cdot \text{Al}_2\text{O}_3$ ). Dokl.  
AN SSSR 155 no.6:1379-1382 Ap '64. (MIRA 17:4)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.

TULOVSKAYA, Z.D.; SEGALOVA, Ye.Ye.; REBINDER, P.A.

Processes of structure formation during crystallization of  
monocalcium aluminate at different temperatures. Koll.zhur.  
26 no.2:252-257 Mr-Apr '64. (MIRA 17:4)

1. Moskovskiy universitet, khimicheskiy fakul'tet, kafedra  
kolloidnoy khimii.



5(4), 24(2)  
AUTHORS:

SOV/20-124-4-41/67  
Segalova, Ye. Ye., Tulovskaya, Z. D., Amelina, Ye. A.,  
Rebinder, P. A., Academician

TITLE:

Causes of the Loss of Strength of the Monocalcium Aluminate  
Crystal Structure Formed  
at High Temperature (O prichinakh snizheniya prochnosti  
kristallizatsionnoy struktury monokal'tsiyevogo alyuminata,  
obrazuyushcheyasya pri povyshennoy temperature)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 876-879  
(USSR)

ABSTRACT:

A short report is first given on the present stage of the problem and on earlier papers dealing with this subject. The formation of a crystallization structure of reduced strength and higher temperature is not due to the formation of another compound, but to a modification of the conditions of the crystallizing-out of the hydrate forming these compounds. The authors investigated the kinetics of oversaturations by employing the conductometric method at an optimum rate of mixing (400 rpm). In order to prevent carbonization of suspensions, all measurements were carried out in a nitrogen atmosphere. In all sufficiently concentrated suspensions

Card 1/4

SOV/20-124-4-41/67

Causes of the Loss of Strength of the Monocalcium Aluminate Crystal  
Structure Formed at High Temperatures

a constant level of electric conductivity is established, which corresponds to the maximum oversaturation or to the conditioned solubility of CA (an abbreviation used by the authors for  $\text{CaO} \cdot \text{Al}_2\text{O}_3$ ). In suspensions of CA a constant level of oversaturation is more quickly attained than in tricalcium-aluminate suspensions, but it is still attained much more slowly than in suspensions of semi-aqueous gypsum. The rate at which maximum oversaturation is attained increases considerably with an increase of the concentration of the suspensions. The existence of stable oversaturations which are independent of the concentration of the suspension is also indicated by the results obtained by the quantitative determination of the concentrations of  $\text{CaO}$  and  $\text{Al}_2\text{O}_3$  of the liquid phase of the suspension, provided that electric conductivity in this liquid phase has attained its maximum value. The samples used for analysis were chosen from the same suspension in which electric conductivity had been measured. The results obtained by analyses made it possible not only to determine the existence of stable oversaturations in the CA-suspensions, but also to characterize them quanti-

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SOY/20-124-4-41/67  
 Causes of the Loss of Strength of the Monocalcium Aluminate  
 Crystal Structure Formed at High Temperatures

tatively. According to the results obtained by the present paper CA is congruently solved: A concentration ratio of  $\text{CaO}$  and  $\text{Al}_2\text{O}_3$  in the liquid phase of the suspension is equal to 1, which corresponds to their ratio in the arid compound. At the same time, the solubility of the hydrate  $2 \text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{aq}$  ( $\text{C}_2\text{A} \cdot \text{aq}$ ) was determined, which was produced by the hydration of CA at  $20^\circ$ . It amounted to 0.49 g  $\text{C}_2\text{A}$  per 1 l of the solution, which is in good agreement with the data found in publications (Ref 8). The concentration ratio of  $\text{CaO}$  and  $\text{Al}_2\text{O}_3$  corresponds to the dicalcium aluminate ( $\text{CaO}/\text{Al}_2\text{O}_3 = 2$ ). The authors carried out similar experiments also at  $60^\circ$ . The curves for the variation of electric conductivity also have a distinct maximum, which increases considerably with an increase in concentration of the suspension, and which becomes noticeable already after a shorter time. In order to be able to determine the amount of stable over-

Card 3/4

Causes of the Loss of Strength of the Monocalcium  
Aluminate Crystal Structure Formed at High Temperature

SOV/20-124-4-41/67

saturation, it is necessary considerably to reduce the rate at which CA is dissolved, without hereby varying the experimental temperature. For this purpose a surface-active substance was added to the suspension, viz. sulfite-alcohol-draff. Also at 60° stable oversaturations occur by the hydration of CA. The maximum value of concentrations does not depend on the concentration of the suspensions, but it is attained more quickly at higher concentrations. There are 3 figures, 1 table, and 11 references, 8 of which are Soviet.

ASSOCIATION: Kafedra kolloidnoy khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova  
(Chair for Colloid-Chemistry of Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 15, 1958

Card 4/4

TULOVSKIY, M. inzhener.

Rail fastenings in open pit mines. Mast. ugl. 6 no.5:13-14 My '57.

(MIRA 10:7)

(Mine railroads) (Railroads--Rails--Fastenings)

TULOVSKIY, M.V., gornyy inzh.

Terminology used in strip mining. Ugol' 39 no.3:22-24 My'64.  
(MIRA 17:5)

1. Institut gornogo dela imeni A.A. Skochninskogo.

MAZUROK, S., inzhener; TULOVSKIY, M., inzhener.

Mechanizing track work in strip mining. Mast.ugl. 3 no.5:10-11 My '54.  
(MLR 7:6)

(Mine railroads)

14-00000, M. V.  
BUYANOV, Yu.D., inzh.; GAZYZOV, M.S., inzh.; DAVIDENKO, Yu.K., inzh.;  
DIONIS'YEV, A.I., inzh.; DEMIN, A.M., inzh.; KARPINSKIY, N.Ye.,  
inzh.; RAZMYSLOV, Yu.S., kand.tekhn.nauk; SKRIPKA, L.V., kand.  
tekhn.nauk; TULOVSKIY, M.V., inzh.; YAMSHCHIKOV, S.M., inzh.;  
OKHRIMENKO, V.A., red.izd-va; BERLOV, A.P., tekhn.red.

[Problems in open-cut mining of coal] Voprosy otkrytoi razrabotki  
ugol'nykh mestorozhdenii. Pod obshchei red. I.U.S.Razmyslova.  
Moskva, Ugletekhizdat, 1957. 338 p. (MIRA 11:4)  
(Strip mining) (Coal mines and mining)



TULOVSKIY, M.V. (g.Iyubertsy).

Rail fastenings for open pit tracks. Put' 1 put.khoz.no.3:35  
Ag '57.

(MLRA 10:9)

(Railroads--Rail)

TULOVSKIY, M.V.

New rail joints used in coal mine railroads. Bul. tekhn.-ekon.  
inform. no.1:66-67 '57. (MIRA 11:4)  
(Mine railroads)

TULOVSKIY, M.Y. ~~inzhener.~~

Screw and bolt fastening of tracks for open pit mines. Gor. zhur. no.5:  
22-25 My '57. (MIRA 10:6)

1. Vostochnyy nauchno-issledovatel'skiy ngol'nyy institut.  
(Railroads--Track) (Mine railroads)

TULOVSKIY, M.V., inzhener; YAMSHCHIKOV, S.M.

Ballasting tracks for coal mines with the aid of hopper cars.  
Mekh trud.rab. 10 no.1:14-15 Ja '56. (MLRA 9:5)  
(Ballast) (Mine railroads)

TULOVSKIY, M.V.

Reinforcing parts of the superstructure of open-pit railroads.  
Gor. i ekon. vop. razrab. ugol'. i rud. mest. no.1:156-167 '62.  
(MIRA 16:7)  
(Mine railroads)

POLAND / Human and Animal Physiology. Internal  
Secretion. The Thyroid Gland.

T

Abs Jour: Ref Zhur-Biol., No 22, 1958, 101991.

Author : Tulozynski, Marian; Miedzianowski, Alfons.

Inst : Not given.

Title : The Application of Serpasil in Basedow's Disease.

Orig Pub: Polski tygod. lekar., 1957, 12, No 38, 1452-1453.

Abstract: A beneficial influence of serpasil is shown in  
Basedow's disease during the preoperative stage  
and in treatment with methylthiouracil.

Card 1/1

49

TUL'MAN, Irina Selifanovna

[Let us obtain high yields from the entire acreage planted to corn]  
Vyrostymo vysokyi urozhai kukurudzy na vsii ploshchi. Kyiv, Derzh.  
vyd-vo sei's'ko-hospodarskoi lit-ry Ukrainskoi RSR, 1955. 21 p.  
(Corn (Maize)) (MLRA 10:9)

BRUTUS, L., otv. red.; ANTONS, R., akademik, red.; KADA, A.,  
red.; RAUD, A., red. [deceased]; TULP, L., red.;  
KIVILA, H., red.; RIISENBERG, A., tekhn. red.

[Materials of the Republic Scientific Economic Conference]  
Vabariikliku majandusteadusliku konverentsi materjalid.  
Tallinn, Eesti NSV Teaduste Akadeemia Majanduse Instituut,  
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